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Ephemeris of the Five Inner Satellites of Saturn.

By A. Marth, Esq.

Angles of position at the Planet's centre, at 20^h Greenwich Sidereal Time.

1873.		Mimas.	Encel.	Tethys.	Dione.	Rhea.
June	13	246°	71°	280°	291°	24°
	14	262	287	104	92	96
	15	271	232	288	242	150
	16	278	102	112	318	268
	17	286	17	298	105	303
	18	296	276	126	266	77
	19	316	155	318	38	110
	20	358	90	156	123	237
	21	50	310	2	279	282
	22	74	261	210	78	13
	23	86	119	52	177	94
	24	94	73	245	293	143
	25	102	289	74	94	266
	26	111	237	261	247	300
	27	123	103	86	324	75
	28	150	25	270	106	108
	29	204	277	94	268	231
	30	243	161	278	45	280
July	1	260	91	101	126	1
	*2	270	314	285	280	93
	3	278	265	110	81	137
	4	285	119	295	188	264
	5	295	75	122	295	297
	6	312	290	310	95	71
	7	351	241	145	250	107
	8	46	104	347	330	224
	9	72	32	195	108	279
	10	85	278	40	269	349

* In the night of July 2 *Saturn* passes near a star 8^m, the position of which does not seem to have been determined accurately anywhere, as it is only found in the Markree Catalogue, vol. i. p. 16. $20^h\ 10^m\ 51^s$, 110° 22′·6, f. 1850. If the apparent place hence deduced ($20^h\ 12^m\ 13^s{\cdot}48$, 110° 18′ 23″·2), and also the *Nautical Almanac* place of the planet were correct, the nearest approach would occur at $22^h\ 13^m$ G. Sid. T., when the star would appear in pos. 165°·8 at the distance of 55″·7 from ♄'s centre.

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1873.		Minas.	Encel.	Tethys.	Dione.	Rhea.
July	11	94°	169°	238°	51°	91°
	12	101	92	69	129	132
	*13	109	318	257	282	262
	14	121	266	83	82	295
	15	146	122	268	198	67
	16	197	77	92	297	105
	17	240	292	276	96	214
	18	258	244	99	253	277
	19	269	105	283	339	330
	20	277	39	107	109	90
	21	284	279	292	271	148
	22	294	177	118	57	260
	23	310	93	306	134	293
	24	346	323	137	283	63
	25	40	267	335	84	104
	26	69	125	179	208	205
	27	83	79	27	300	276
	28	92	293	229	98	332
	29	100	247	63	255	88
	30	108	106	253	347	125
	31	120	45	80	111	257
Aug.	1	141	280	265	272	291
	2	190	186	90	62	57
	3	236	94	273	139	102
	4	256	328	97	284	193
	5	268	268	281	86	274
	6	274	127	105	217	324
	7	283	80	289	303	86
	8	293	295	115	99	121
	9	307	249	301	257	254
	10	339	107	130	358	289
	11	33	50	324	113	50
	12	66	281	165	274	101
	13	81	193	11	65	182
	14	91	96	216	145	273

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* In the afternoon of July 13 *Saturn* passes near a star 9^m, the apparent place of which, deduced from Arg. Oe^2 20357, is found to be $20^h\ 9^m\ 9^s{\cdot}88$, 110° 28′ 28″·0.

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1873.	Mimas.	Encel.	Tethys.	Dione.	Rhea.
Aug. 15	99°	333°	55°	286°	318°
16	107	269	247	87	84
17	118	130	76	224	118
18	138	82	262	306	251
19	182	298	87	100	287
20	231	251	271	260	43
21	254	109	95	7	99
22	266	54	279	115	171
23	274	282	103	275	271
24	282	200	287	68	313
25	291	96	112	151	82
26	305	339	297	288	116
27	333	270	125	89	247
28	25	134	316	229	286
29	62	83	152	310	34
30	79	299	355	102	97
31	90	253	202	261	161
Sept. 1	98	110	44	16	270
2	106	59	240	118	309
3	117	283	70	276	79
4	134	207	258	71	114
5	173	97	84	158	240
6	224	346	268	289	284
7	251	271	93	90	23
8	264	137	276	234	96
9	273	84	100	314	152
10	281	291	284	103	267
11	290	255	109	263	305
12	303	111	294	25	76
13	328	59	120	120	111
14	16	284	309	277	235
15	58	212	141	73	282
16	77	98	339	165	11
17	88	351	184	291	94
18	96	272	30	91	144
19	104	140	230	238	265
20	115	85	64	318	301
21	130	303	254	104	73

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1873.		Mimas.	Encel.	Tethys.	Dione.	Rhea.
Sept.	22	163°	256°	80°	265°	109°
	23	216	113	265	32	228
	24	247	62	90	122	280
	25	262	285	274	278	359
	26	272	216	98	76	92
	27	279	99	282	172	137
	28	288	356	106	292	263
	29	300	273	290	92	298
	30	322	143	116	242	69
Oct.	1	5	86	303	322	107
	2	51	305	132	105	219
	3	74	257	326	266	278
	4	86	114	166	38	347
	5	95	64	12	124	90
	6	102	286	217	279	131
	7	112	220	55	78	260
	8	126	100	247	180	295
	9	154	1	75	294	63
	10	206	274	262	93	105
	11	242	146	87	245	208
	12	259	87	271	326	277
	13	269	306	95	106	336
	14	278	258	279	267	88
	15	286	115	102	43	127
	16	297	66	287	127	257
	17	314	287	111	280	292
	18	352	223	297	79	57

These angles of position are reckoned in the usual way from the circle of declination. In comparing them with estimations reckoned from the direction of the minor axis of the ring, about 8° must be subtracted.

The distances of the satellites, expressed in semi-diameters of the ball, vary between the limits

	1·1	1·4	1·8	2·2	3·1
and	3·1	4·0	5·0	6·4	8·9

the form of their apparent orbits being very nearly symmetrical with the outline of the ring.